**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 3 Study Sheet pgs. 1-2**

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| **Property: Zero as an Exponent:** For any nonzero number a,  a0 = \_\_\_\_\_\_. Ex: (4x2)0 = \_\_\_\_\_\_ |
| **Property: Negative Exponents:**  **a-m = 1 1 = am**  **am a-m**  \*If a negative exponent is in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, move it to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and make it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  \*If a negative exponent is in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, move it to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and make it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Ex 1: x-2 = \_\_\_\_\_\_\_\_\_ Ex 2: 5a-3 = \_\_\_\_\_  b-2 |
| **Property: Multiplying Powers with the Same Base:**  When multiplying powers with the same base, keep the base the same and \_\_\_\_\_\_\_\_\_\_ the exponents. If there are coefficients, use the commutative property to multiply them separately.  Ex 1: x3x5 = \_\_\_\_\_ Ex 2: a-8a10 = \_\_\_\_\_\_\_\_  Ex 3: (9a4b-3)(3a-2b8) = \_\_\_\_\_\_\_\_\_\_\_\_  Ex 4: 8x2y-3(4xy4 + 2x3y9) = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

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| **Property: Powers to Powers**  **When raising a power to a power, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!**  **For the coefficients, use \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ exponent rules!**  **Ex 1: (x4)2 = \_\_\_\_\_\_\_\_\_\_\_ Ex 2: (3x4)2 = \_\_\_\_\_\_\_\_\_**  **If there are multiple variables inside the parentheses,**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the exponent to EACH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_!**  **Ex 3: (x5y6)3 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Property: Division Property of Exponents**  **When dividing powers, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the exponents!**  **If there are coefficients, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the fraction!**  **Ex 1: = Ex 2: = Ex 3: =** |
| **Mixed Review:**   |  |  | | --- | --- | | 1. a2b5(-2a6b-10) | 2. | | 3. 2 | 4. 5gh2(2gh - 3g3h5) + 7g2h3 | |

**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Unit 3 Study Sheet** **Pgs. 3-4**

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| **simple interest:** interest on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ only   |  |  | | --- | --- | | **Simple Interest Formula:** | Ex: You lend your friend $400 and charge her 4% monthly simple interest. How much money will she owe you after six months? |   **compound interest:** interest on \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ already \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   |  | | --- | | **Compound Interest Formula:** |  |  |  | | --- | --- | | **Type of Interest** | **Divide Annual Interest Rate by….**  **Multiply Number of Years by...** | | **Annual** |  | | **Semi-Annual** |  | | **Quarterly** |  | | **Monthly** |  |   **Find the balances of each:**   |  |  |  | | --- | --- | --- | | Ex 1: $350 on a credit card with a 36% annual interest rate, compounded monthly, for six months | Ex 2: $4,600 in a bank with a 2.4% annual interest rate, compounded semi-annually, for three years | Ex 3: $2,098 in a bank with a 2.8% annual interest rate, compounded quarterly, for nine years | |

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| **Exponential Growth/Decay Formula (label the parts):** | **How to find b if given a percentage in an exponential growth situation:** |
| **Two Types of Exponential Decay (and how to find b in each):** | Ex 1: The half-life of Fultonium is six days. If you begin with 40.8 grams of Fultonium, how many grams will be present after thirty days? Round to the nearest hundredth. |
| Ex 2: The population of lobster-scorpions is growing by a factor of three weekly. If there are currently seven lobster-scorpions, how many will there be in two months? | Ex 3: The population of Kolb Island is growing by 5.4% annually. If there are currently 320,982 people on Kolb Island, how many people will live there in 2023? Round to the nearest person. |
| Ex 4: A power boat is purchased in 2014 for $34,200. The value of the boat depreciates at an annual rate of 3.9%. What will the boat’s value be in 2021? | Ex 5: A bank has an annual interest rate of 7.3% for its savings account. If you deposit $3,000 into a savings account and the interest is compounded daily, how much money will be in your account after two months? |